

Abstract of the Disclosure

Method and apparatus for the treatment of fluids, particularly wine, to remove unwanted substances. The wine is treated in a reverse osmosis (R.O.) treatment unit, generating a retentate and a raw permeate.

5 The membrane for the R.O. unit is selected to pass in the permeate the unwanted substances, such as volatile acidity (ethyl acetate and acetic acid). The raw permeate is subjected to a treatment column. In the case of volatile acidity, this is an anion exchange column, which removes the acetic acid from the permeate by anion exchange and removes the ethyl

10 acetate by base hydrolysis. This produces a purified permeate, which is depleted in volatile acidity, but contains other components desirable for the wine. The purified permeate is then recombined with the retentate from the R.O. column, and the result is wine with the volatile acidity and little else removed. This wine may be recirculated through the system to

15 remove yet more of the volatile acidity. Before the anion exchange step, a low-energy distillation may be used to remove  $\text{CO}_2$ ,  $\text{H}_2\text{S}$ , or other relatively volatile compounds. To remove acetaldehyde, a low-energy distillation column is used instead of the anion exchange column, and the distillation residue constitutes the purified permeate that is

20 recombined with the retentate from the R.O. column. A high-energy distillation column may be used to separate out alcohol and water, and then add either the alcohol or the water back to the R.O. retentate, thus producing either a higher alcohol or a lower alcohol beverage.